A low-input dairy grazing operation in Brittany

Biodiversity, dynamic rotational grazing and crossbreeding — two organic milk producers from Finistère have developed a profitable and resilient system from low potential pasture.
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At jointly-run Bontul farm, the idea to convert to organic dates back to 1996, the year Jean-François Conan joined his brother Michel on this 110ha family farm. But the project only became a reality in 2009. “As the switch took 13 years, we were well prepared,” jokes Jean-François Conan on the morning tour of his grass fields, which are tucked away in the very east of Finistère, about 20km to the north of Lorient. This lengthy preparation enabled the two farmers to experiment and gain a good understanding of the grass beforehand. This was essential as the process involved reducing the share of maize in the feed ration to a minimum for the 80 dairy cattle. As a conventional farm, the pasture — sown with perennial ryegrass and white clover — was poorly suited to the summer heat and the farm’s light, dry soil. “The ryegrass only grew two months a year,” remembers Mr Conan.

Varied pasture species
The first step was to plant multi-species pasture with more resistant grasses and a wide variety of plants able to efficiently draw nutrients and water from the soil. “The current cropping system includes 95ha of grass; 70ha for grazing and 25ha for hay and silage. In the pasture, meadow fescue and dactyl are added to the diploid and tetraploid perennial ryegrass, together with a little Timothy and bluegrass — which are social species well suited to mixes — and 300g/ha of chicory for its worm-control properties and taproot.”

When it comes to legumes, there is white clover and white Dutch clover together with purple clover, which will disappear after three years but is a good cover crop and very productive in the first few years. As for the meadows, they feature a mix of hybrid ryegrass, tall fescue, meadow fescue, dactyl, purple clover, and alfalfa if the pH levels allow it. In a normal year, there is a yield of 6t/ha/year of DM in the pasture and 8t/ha/year on the meadows.

“The grass does not weather well here and productivity falls after a few years. We could try waiting to see if it picks up but it is tricky with 80 dairy cattle to feed,” says Mr Conan. Pastures are therefore resown in rows and under an oat cover crop every five to seven years.

One milking a day and grazing from May to September
The way the grass is used can be called dynamic rotational grazing. “We prefer a high stocking rate with short rotation periods.” This means leaving the whole herd a

maximum of 48 hours on 0.8ha paddocks before moving the animals. “The cows need to move about rather than trample the grass. They need to maintain their appetite and not hinder regrowth,” Mr Conan sums up. In the best-case scenario, this leaves the grass about four weeks to recover before the herd returns. The farm benefits from plots of land that are close together and are well connected with a path infrastructure.

The meadows are used to produce grass silage (bales and clamp). Weather permitting, the first cut takes place on May 10, the second in early July and the last one in September. The crop rotation system also includes 3ha of maize and 7ha of soft wheat, which Mr Conan’s wife uses to make farmhouse bread. In rotations with cereals, grass is followed by maize, winter wheat, forage rape and then grass is sown again. For the remaining areas, only rape will be used as a cover crop and winter forage between the end of one grazing phase and the seeding of the next.

Low feed costs

The cows are milked once a day between May and September, with 70% of calvings taking place in the spring and 30% in the autumn. Cows calving in the autumn are dried off in the summer in case of low rainfall, to take the pressure off the grassland. This is because between May and September, the cows only graze on pasture grass. “In early September, when the first calves are born, we reintroduce a small amount of maize to the feed ration — 3kg of dry matter,” Mr Conan explains. The wrapped hay bales serve as a buffer between the available grass and the fodder. In winter, the cows are fed grass silage and mineral supplements. Fresh grass is reintroduced progressively at the end of February, and silage is fed at the same time while stocks last. Baled oat hay is introduced in early spring. All this amounts to a feed cost per cow of €39/1,000l. The calves are raised by suckler cows on outlying plots of land and return to the cowshed on November 1.

A mixed herd

Following a trip to England, Mr Conan introduced crossbreeding to add value to grass production thanks to “made-to-measure” animal genetics. The farm used to have Holstein then Montbeliarde cattle but has switched to four-breed rotational cross-breeding (Holstein x Montbeliarde x Norwegian Red x Jersey).

Sought-after criteria include good locomotion (Norwegian Red) and docility (Jersey), as the cows sometimes have to walk 2km to reach the pasture. The Montbeliarde is chosen for its build and compensates for the loss of size linked to the Jersey breed. “The Holstein brings milk volume and the Jersey; milk butterfat and protein.

Norwegian Reds also perform well in terms of health.” Fertility is another essential criterion, as the cows must calve within a six-week period to make the most of the grass in spring.

Seeking sustainability
Today, all the farm's economic indicators are positive, and the farmers can even take some weekends off and enjoy two weeks of holiday a year. With milk production at 5,000l/cow/year and milk butterfat and protein rates of 3.3-4.3%, income from milk amounts to €180,000; roughly the same as the conventional farming system because the organic bonus makes up for the fall in yield. All the milk is sold to Lactalis. Turnover is close to €250,000, including €35,000 from farmhouse bread, which is sold via a community-supported agriculture network, the internet and a market.

"We have improved our gross operating surplus considerably compared to operating as a conventional farm, but the profit made is a result of cost savings rather than increased turnover," says Mr Conan. Most of the work is carried out by a contractor or using an agricultural equipment co-operative. "We realize we are lucky to have built up such a resilient system given the current economic situation. Even if there is no production or prices fall, we do not have any major production costs and we can quickly adapt the volume produced."

The future of the pasture
Climate change, however, has become a real worry. 2016 saw another drought. There was hardly any rain between July and October in addition to a dry, easterly wind. This is a far cry from the usually humid and temperate climate in Brittany. The grass was green but it was not growing. "With the extra animals from restocking over the past few years, I lost my forage buffer and therefore had to slow up and cull more than usual," says Mr Conan.

The ryegrass really suffered and some pastures over two years old will need to be replanted. In the long term, the system will need to evolve to adapt to global warming, predicts the farmer. Regional forecasts foresee drier weather in the summer and wetter and milder winters. "We'll therefore have to reduce grazing in summer and rely on stocks. But we can put the cows out earlier in spring and leave them out later in the autumn. We are lucky to have land that enables this."

This adaptation will also mean new mixes of species. "It is clear that there will be less perennial ryegrass and we'll need to find more suitable fescue varieties. Red fescue may be a possibility for its quality and palatability. We can also expect progress in terms of plant breeding." Still on the subject of climate change, Mr Conan would like to develop his cultivation techniques to store even more carbon, for example by cutting out ploughing.

Four-breed crossbreeding
The crossbreeding program usually follows a cycle that starts with the Holstein and ends with the Jersey breed, but there are exceptions according to the individual expression of race traits. "When cows are too small, we don't use a Jersey but rather a Holstein or Montbeliarde," says Mr Conan. "If a cow doesn't produce enough milk, we'll bring Holstein back into the rotation earlier." Not forgetting of course that the heifers are served naturally by a crossbred bull, changed every two years, which complicates the management of genetics.
As the jointly-run farm bought crossbred cows when it abandoned pure breeds, all the breeds are already present in the herd. The first four-breed heifers only arrived in 2017, but heterosis is already being observed through improved milk butterfat and protein, and fertility.

A few farm figures

- Milk yield at the height of grass production and the beginning of lactation: 21l/day. In winter, at the end of lactation with stored fodder: Roughly 13l/day.
- Cowshed: 550m^2 of straw bedded pens and 360m^2 of exercise area.
- Seed mixes:
    - Pasture: 6kg of diploid perennial ryegrass, 6kg of tetraploid, 3kg of meadow fescue, 1.5kg of dactyl, 2kg of Timothy and 1kg of bluegrass. Leguminous plants: 4kg of white clover, 1kg of white Dutch clover and 2kg of purple clover.
    - Meadows: 10kg of hybrid ryegrass, 5kg of tall fescue, 4kg of meadow fescue, 2kg of dactyl, 6kg of purple clover and 6kg of alfalfa. If the conditions are not suitable for alfalfa: 12kg of purple clover and 3kg of intermediate white clover.